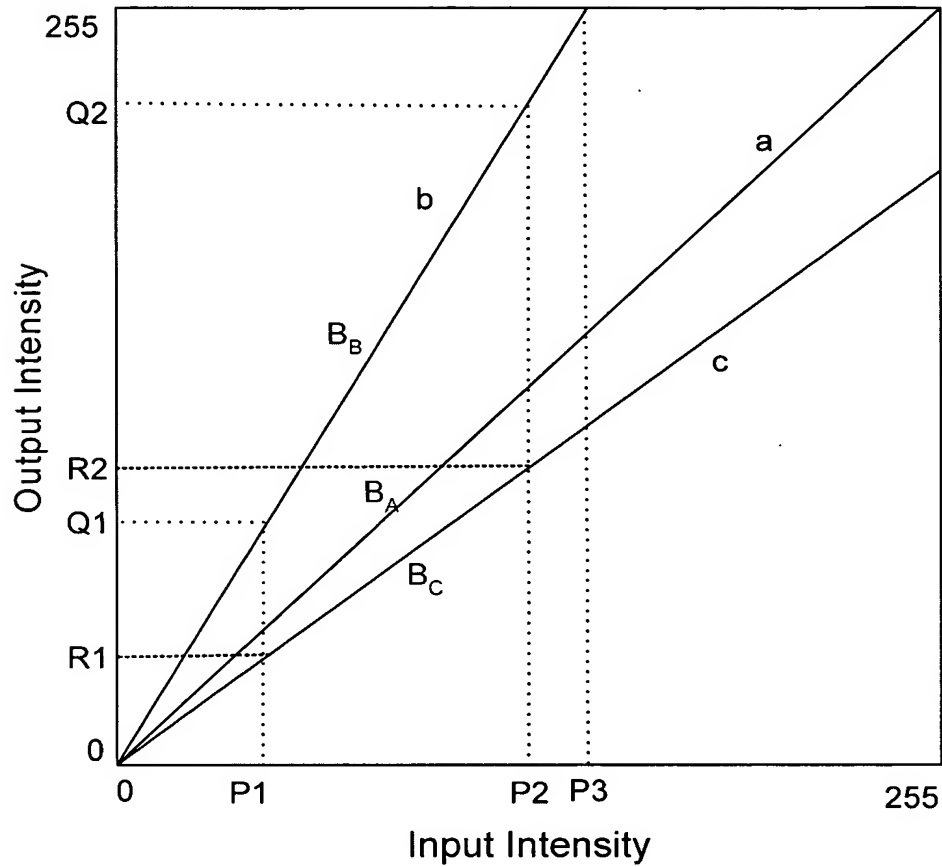a - No change in output (Avg brightness B_A)
b - Increased contrast, Increased brightness (Avg brightness B_B)
c - Decreased contrast, Decreased brightness(Avg brightness B_C)

Figure 1

Standard contrast adjustment

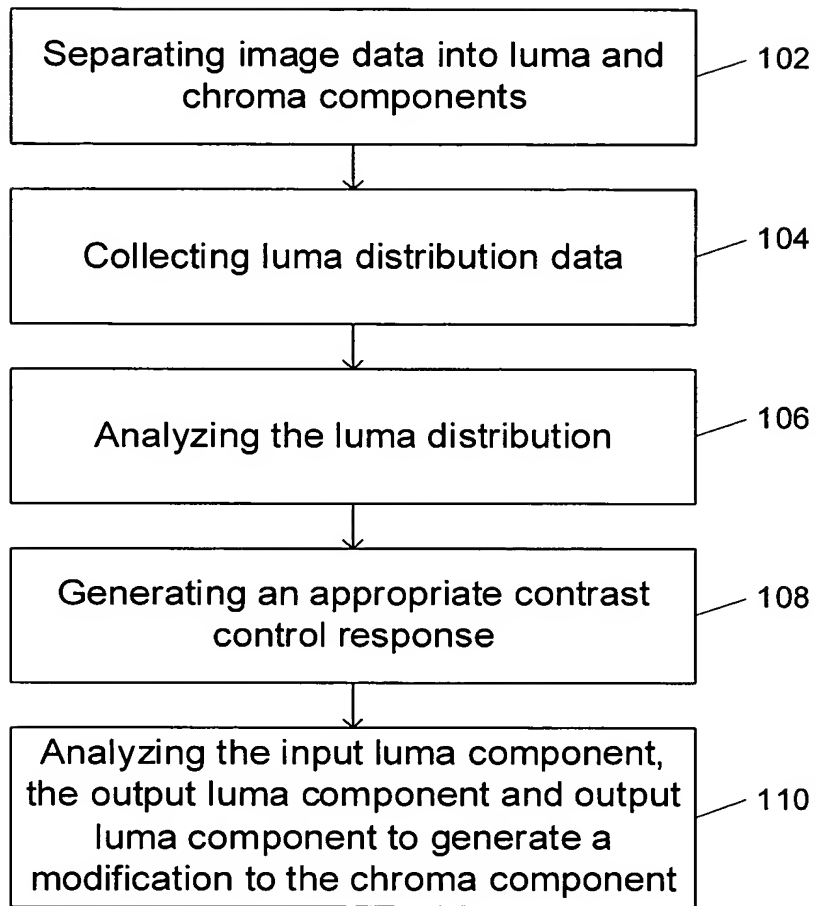Separating image data into luma and chroma components — 102

Collecting luma distribution data — 104

Analyzing the luma distribution — 106

Generating an appropriate contrast control response — 108

Analyzing the input luma component, the output luma component and output luma component to generate a modification to the chroma component — 110

Fig. 2
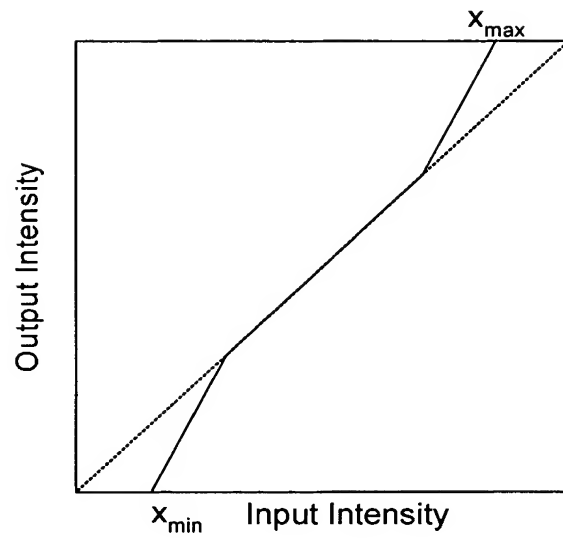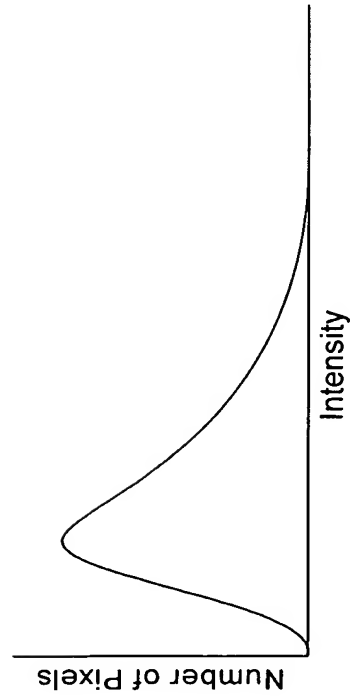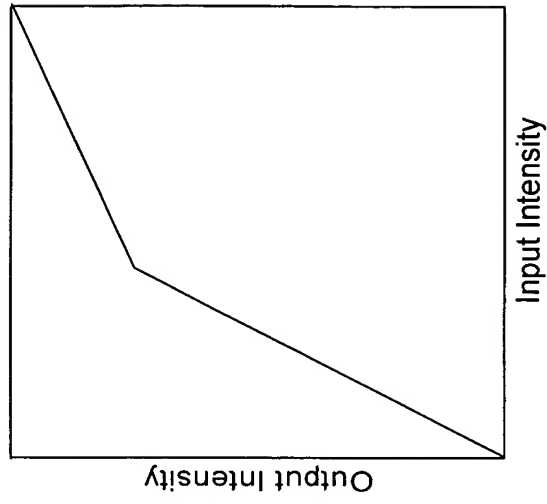
Figure 3

Recovering full luma dynamic range ("Snapping")

Figure 4

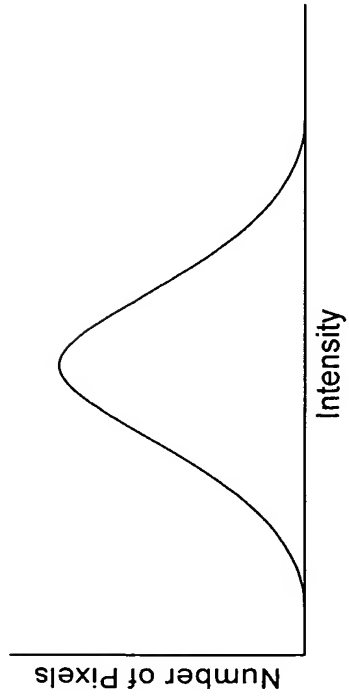Dark image template transfer function
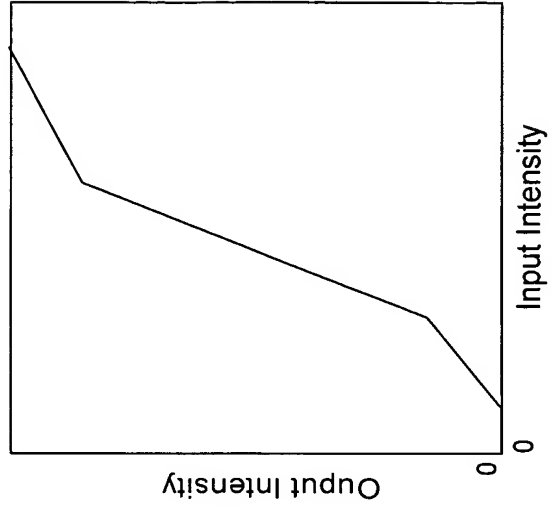
Figure 5

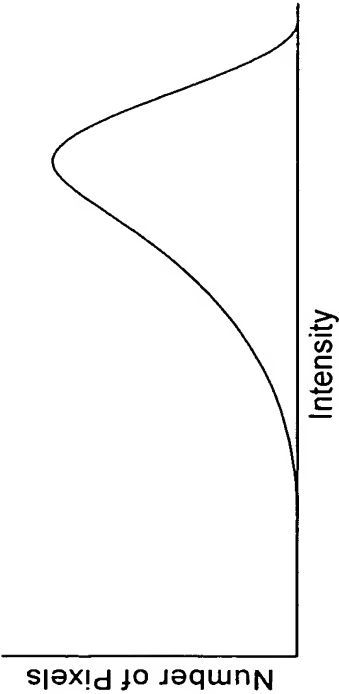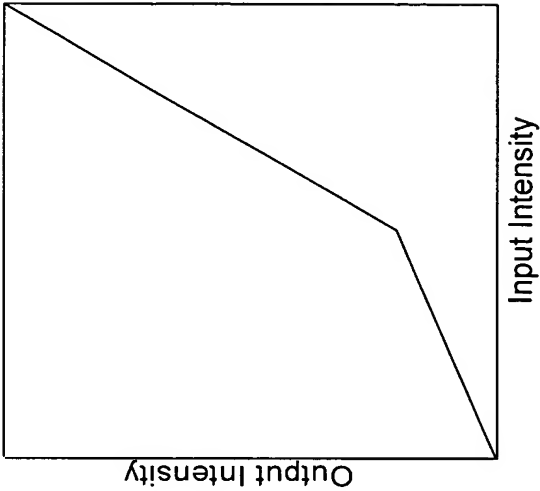Mid-tone image template transfer function
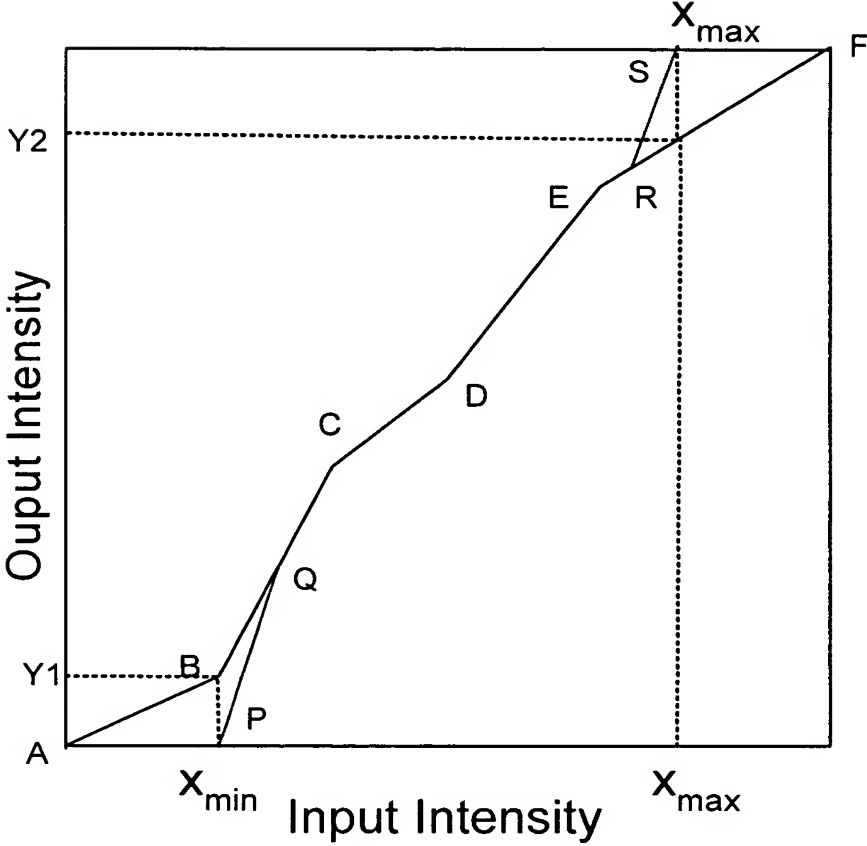
Figure 6

Bright image template transfer function

Figure 7

Snapping the blended template transfer functions

MEM1 - Average Histogram and previous Histogram Memory

MEM2 - Template Transfer function Memory

MEM3 - Final LUT Memory

Figure 8

Representative hardware implementation data path